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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,283	03/18/2002	Hannu Saarelma	RR-493 PCTUS	2599

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EXAMINER	
AGGARWAL, YOGESH K	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 07/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/018,283	SAARELMA, HANNU	
	Examiner	Art Unit	
	Yogesh K. Aggarwal	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) *16-27* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Election/Restrictions

1. Applicant's election with traverse of group I associated with Claims 1-15 is acknowledged. The traversal is on the ground(s) that the subject matter of both groups is sufficiently related that a thorough search for the subject matter of any one group would encompass a search for the subject matter of the other group. This is not found persuasive because the non-elected group contains features, which would not be included in a class/subclass search or text search for the elected group.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The disclosure is objected to because of the following informalities:

Content of Specification

(a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

(b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.

(c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.

(d) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e)

and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.

Or alternatively, Reference to a "Microfiche Appendix": See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.

(e) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:

(1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."

(2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."

(f) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

(g) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.

(h) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or

processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.

(i) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).

(j) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).

(k) Sequence Listing, See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-5, 7, 8 and 10-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (US Patent # 4,467,361) in view of Matsuyama et al. (US Patent # 5,796,095).

[Claim 1]

Ohno et al. teaches a camera system comprising a camera (col. 1 lines 10-11, figure 3) provided with an optics system (32 and 34) and a photosensitive image surface (35) disposed near the optics system symmetrically relative to its optic axis (See figure 3), the image of the object refracted by the optics being projected onto the image surface , the photosensitive image surface (35) being a concave spherical surface (col. 4 lines 59-col. 5 line 5). Ohno teaches that the solid state image sensing array is made of an array of sensors (col. 1 lines 60-63). Ohno et al. also teaches that the radius of curvature of the image sensor is chosen in such a way so that a sharp image can be obtained equal to the curvature of field (col. 5 lines 20-40 and abstract). Ohno fails to teach wherein the detecting elements are so arranged on the image surface that their density is at a maximum on the optic axis and diminishes from the optic axis toward the edge zones.

However Matsuyama et al. teach photoelectric converting portions 5 and 6 on a sensor 4 such that the mixture of a narrow area 10 (at the center near the optic axis, therefore higher density) and wide area 7 (at the periphery, therefore density decreases from the optic axis toward the edge zones, col. 2 line 66-col. 3 line 18).

Therefore taking the combined teachings of Ohno and Matsuyama, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have detecting elements that are so arranged on the image surface such that their density is at a maximum on the optic axis and diminishes from the optic axis toward the edge zones in order to use the sensor for both the study of the object in a wide field of view and for detailed study in a narrow field of view as taught in Matsuyama.

[Claim 2]

Re this claim, by comparing the density of pixels as claimed in claim 1 of the applicants with figure 1 of Matsuyama et al. it is apparent that since the same density pattern for CCD elements exists, the same mathematical relationship exists between the two. Therefore it is considered that if density pattern is the same, the mathematical relationship would inherently be the same as recited in this claim.

[Claim 3]

Ohno teaches that the solid state image sensing array is made of an array of CCD elements (col. 1 lines 60-63).

[Claims 4 and 5]

Official Notice is taken of the fact that it is common to have photodetecting elements in the order of 100000 and as the number of photodetecting elements increase the quality of the picture increases. Therefore taking the combined teachings of Ohno, Matsuyama and Official Notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have photodetecting elements in the order of 100000 and as the number of photodetecting elements increase the quality of the picture increases in order to have a picture with better results and pleasing to the viewer.

[Claim 7]

Ohno et al. teaches an objective lens of focal length fi and field of view to be 90 degrees or less (col. 5 lines 6-17) and a stop (33) disposed between the optics (32) and image sensor (35).

[Claim 8]

Ohno teaches that the field of view is more than 90 degrees (col. 5 lines 38-40). Image surface shown in figure 3 is less than a hemisphere shape, therefore the field of view will be less than 180 degrees.

[Claims 10-13]

Ohno teaches that the images can be transmitted to a display device 37 (monitor, figure 3) but fails to teach if the display device is for a computer and whether the camera is a still, moving or a monitoring camera. However Official Notice is taken of the fact that it is obvious to one skilled in the art to have been motivated to have a display device for a computer and a camera that is still, moving or monitoring camera in order to display different kind of images remotely. Therefore taking the combined teachings of Ohno, Matsuyama and Official Notice, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a display device for a computer a camera having still, moving or a monitoring functions in order to display different kind of images remotely.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (US Patent # 4,467,361), Matsuyama et al. (US Patent # 5,796,095) and in further view of Broome et al. (US Patent # 6,178,046).

[Claim 6]

Matsuyama et al. teach photoelectric converting portions 5 and 6 on a sensor 4 such that the mixture of a narrow area 10 (at the center near the optic axis, therefore higher density) and wide area 7 (at the periphery, therefore density decreases from the optic axis toward the edge zones, col. 2 line 66-col. 3 line 18). Ohno in view of Matsuyama fails to teach that the

point spread function (PSF) produced by the optics integrates over several detecting elements to prevent aliasing.

However Broome et al. teaches an aperture stop 150 of an optical system 100 having four apertures to spread a point image (PSF) over more than one pixel in a detector array in order to reduce aliasing effects (col. 3 lines 35-45, col. 2 lines 32-49, figure 5).

Therefore taking the combined teachings of Ohno, Matsuyama and Broome, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a point spread function (PSF) produced by the optics integrates over several detecting elements to prevent aliasing.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (US Patent # 4,467,361), Matsuyama et al. (US Patent # 5,796,095) and in further view of Suzuki et al. (US Patent # 5,004,328).

[Claim 9]

Ohno in view of Matsuyama fails to teach a fish eye lens having a recording angle of 180 degrees. However Suzuki teaches a fish-eye lens is designed with an intentionally large negative distortion, thereby achieving an imaging angle of 180.degree (col. 7 lines 63-67) in order to prevent the significant loss in the amount of light in the peripheral area.

Therefore taking the combined teachings of Ohno, Matsuyama and Suzuki, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have a fish-eye lens that is designed with an intentionally large negative distortion, thereby achieving an imaging angle of 180 degree in order to prevent the significant loss in the amount of light in the peripheral area.

7. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohno et al. (US Patent # 4,467,361), Matsuyama et al. (US Patent # 5,796,095) and in further view of Nayar (US Patent # 6,118,474).

[Claims 14 and 15]

Ohno fails to teach wherein system comprises two adjacent semispace recording cameras directed in the same or opposite direction for the recording of a stereo image of the semi-space and for the recording of the whole space. However Nayar teaches an omnidirectional imaging apparatus (figure 7) having two cameras 110 and 710 facing in the same direction which is complementary to the hemispherical scene 130 so that they together constitute a spherical scene (col. 11 line 63-col. 12 line 4). It would be obvious to one skilled in the art to have cameras in opposite directions of Nayar.

Therefore taking the combined teachings of Ohno, Matsuyama and Nayar, it would have been obvious to one skilled in the art at the time of the invention to have been motivated to have two adjacent semispace recording cameras directed in the same or opposite direction for the recording of a stereo image of the semi-space and for the recording of the whole space in order to have a scene that is spherical or omnidirectional.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yogesh K. Aggarwal whose telephone number is (571) 272-7360. The examiner can normally be reached on M-F 9:00AM-5:30PM.

8. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on (571)-272-7593. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

9. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

YKA
July 7, 2005

DAVID L. OMETZ
PRIMARY EXAMINER